

Amendments to the Claims

1. (currently amended) A closed three-site quantum particle system, comprising: a first site in which ~~the~~ energy is controllable; a second site in which ~~the~~ energy is controllable; states in the first and second sites that are strongly coupled to each other by coherent tunnelling, and where a tunnelling rate is controllable; and, a third site in which ~~the~~ energy is controllable, the third site having a state that ~~and where the state in the third site~~ is weakly coupled by coherent tunnelling to the states in the first and second sites ~~states~~, so that the third state is able to map out ~~the~~ populations of the first and second states as its energy is scanned with respect to the first and second states.

2. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 1, wherein the states in the first and second sites ~~states~~ are a solid-state charge qubit with one particle shared between the first and second ~~two~~ sites.

3. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 2, wherein the system is operated in the superposition basis with an integrated readout using the state of the third site as a probe state.

4. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim, ~~2 or 3~~ wherein Adiabatic Fast Passage (AFP) is employed as a readout mechanism, and during readout the AFP has trajectory.

5. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 4, wherein ~~the~~ difference between the energy of the probe state ~~energy~~ and the energy of the qubit, and the tunnelling rate between the probe state and the qubit are modulated to effect AFP.

6. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 4, wherein the AFP trajectory is reversed to re-initialise the qubit into a known state.

7. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 1, wherein the energies and tunnelling rates are controlled using gate electrodes.

8. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 7, wherein ~~the~~ voltages on the gate electrodes are controlled.

9. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 7, wherein a sensitive electrometer is used for reading out the population in the third state.

10. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 9, wherein the sensitive electrometer is realised by a single electron transistor (SET) which monitors ~~the~~ charge in the third, weakly coupled, site.

11. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 10, wherein the sensitive electrometer is realised by a quantum point contact.

12. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 1 when used for readout from a quantum computer.

13. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 1, wherein alternatively, the first site involves a solid-state spin qubit, and the second site involves a reference spin, and the state of the third site is used as a probe state site.

14. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 13, wherein ~~the~~ relative spins of the first and second sites are converted into charge distribution information.

15. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 13 or 14, wherein Adiabatic Fast Passage (AFP) is employed as a readout mechanism, and during readout the AFP has trajectory.

16. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 15, wherein the difference between the energy of the probe state energy and the energy

of the qubit, and the tunnelling rate between the probe state and the reference spin ~~states~~ are modulated to effect AFP.

17. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 16, wherein the AFP trajectory is reversed to re-initialise the qubit into a known state.

18. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 13 wherein the energies and tunnelling rates are controlled using gate electrodes.

19. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 18, wherein ~~the~~ voltages on the gate electrodes are controlled.

20. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 19, wherein a sensitive electrometer is used for reading out the population in ~~the~~ third state.

21. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 20, wherein the sensitive electrometer is realised by a single electron transistor (SET) which monitors ~~the~~ charge in the third, weakly coupled, site.

22. (currently amended) ~~A~~ The closed three-site quantum particle system according

to claim 21, wherein the sensitive electrometer is realised by a quantum point contact.

23. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 13, applied to readout from a quantum computer.

24. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 23, wherein the quantum computer uses nuclear spin or electron spin qubits.

25. (currently amended) ~~A~~ The closed three-site quantum particle system according to claim 1, wherein the system is used with flux quanta or 2D electron gas, and a third state introduced for readout.

Claims 26-41 are canceled.